

REMARKS

Applicants respectfully request consideration of the subject application. This Response is submitted in response to the Office Action mailed August 4, 2006. Claims 1 – 22 stand rejected. Claim 20 has been amended. No new matter has been added.

35 U.S.C. §§ 102 and 103 Rejections

The Examiner has rejected claim 20 under 35 U.S.C. § 102(b) as being anticipated by Lee. The Examiner has rejected claims 1, 4, 8, 9, 11, 12, 16, 20, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,850,683, hereinafter "Lee") in view of Wolf et al. (Silicon Processing for the VLSI Era, Vol. 1, Lattice Press (1986), hereinafter "Wolf"), Bierhoff (Influence of the Cross Characteristics; University of Paderborn, Germany; presented at 6th IEEE-SPI Workshop; 5/13/2002, hereinafter "Bierhoff"), Yates et al. (U.S. Patent No. 6,703,319, hereinafter "Yates"), and Patel et al. (U.S. Publication No. 2004/0240822, hereinafter "Patel"), claim 21 under 35 U.S.C. § 103(a) as being unpatentable over Lee in further view of Lee, claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Lee, Wolf, Bierhoff, Yates and Patel in further view of Awad (Ultrasonic Cavities and Precision Cleaning, hereinafter "Awad"), claims 3 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Lee, Wolf, Bierhoff, Yates and Patel in further view of Ishida et al. (U.S. Patent No. 4,695,122, hereinafter "Ishida"), claims 7 and 15 under 35 U.S.C. § 103(a) as being

unpatentable over Lee, Wolf, Bierhoff, Yates and Patel in further view of Li (U.S. Patent No. 5,976,767, hereinafter "Li"), claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Lee, Wolf, Bierhoff, Yates and Patel in further view of Patel and Newn et al. (U.S. Patent No. 3,999,835, hereinafter "Newn"), claims 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Lee, Wolf, Bierhoff, Yates and Patel in further view of Ilardi (U.S. Patent No. 5,466,389, hereinafter "Ilardi"), and claims 17-19 under 35 U.S.C. § 103(a) as being unpatentable over Patel in view of Bierhoff, Wolf, and Li.

Applicants do not admit Patel is prior art and reserve the right to swear behind Patel at a later time. Nevertheless, Applicants respectfully submit the presently claimed invention is patentable over the cited art.

Patel discloses providing rounded edges/corners along the extent of the waveguiding region. In particular, Patel discloses that an additional, sacrificial silicon layer is applied to the waveguide and the additional, sacrificial silicon layer is etched to provide edges to the waveguide that are rounded. Patel does not disclose etching the waveguide such that the waveguide has a substantially rounded surface.

In contrast, in embodiments of the presently claimed invention, the waveguide is etched to have a substantially rounded surface. The Examiner has provided no disclosure in the cited art for etching the waveguide to have a substantially rounded surface.

As explained in the present specification, a waveguide having a substantially rounded surface has been demonstrated to reduce the scattering of the light signal within the waveguide. This minimizes the light loss during propagation of the light through the waveguide. The retention of the intensity of the light signal can therefore be maximized.

The light loss in the waveguide in Patel would not be minimized as the waveguide in Patel is not rounded. Instead, the material surrounding the waveguide in Patel is rounded.

Neither Lee, Yates, Bierhoff, Wolf, nor any other cited reference discloses etching the waveguide such that the waveguide has a substantially rounded surface. In addition, none of the cited art references disclose minimizing light loss through the waveguide by forming a waveguide having a substantially rounded surface.

In addition, one of skill in the art would not combine and/or modify the cited art to arrive at the presently claimed invention.

First, Applicants note that the Examiner cites Yates for recognizing that sonic energy may be used to clean semiconductor wafers. However, as presently claimed, the sonic energy is used to form the waveguide having a substantially rounded surface. One of skill in the art would not apply sonic energy to a wet etch solution to form a waveguide having a substantially rounded surface based on a disclosure that sonic energy can be used to clean semiconductor wafers.

Moreover, as indicated in MPEP § 2141, "reasonable expectation of success is the standard with which obviousness is determined." Applicants submit that, based on the disclosure of the prior art, there would not be a reasonable expectation of success. Again, a disclosure that sonic energy can be used to clean semiconductor wafers (i.e., Yates) does not lead to a reasonable expectation of success that a waveguide having a substantially rounded surface can be formed. Similarly, a disclosure that adding silicon material along the extent of the waveguide to form sidewall fillets having a rounded shape (i.e., Patel) does not lead to a reasonable expectation of success that a waveguide having a substantially rounded surface can be formed.

As explained in the present specification, control of the etch process is important in forming the waveguide as presently claimed. In particular, in embodiments in which sonic energy is used, as presently claimed, the viscosity of the wet tech solution may be reduced, which is valuable, for example, because the isotropic properties of the wet etch may be lost with increased viscosity of the wet etch solution. In addition, low temperature wet etch solutions, which are made possible by the application of the wet etch solution, also slow the rate at which the waveguide is etched. Lower wet etch rates provide greater control of the etch process and reduces variation between the etching of different waveguides on a single substrate.

Thus, the cited art fails to teach or suggest all of the limitations of independent claims 1, 17 and 20. Claims 2-4, 7-16, 18-19 and 21- 22 depend, directly or indirectly, from one of the forgoing independent claims. Applicants, accordingly, respectfully request withdrawal of all the rejections.

Applicants respectfully submit that the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Jennifer Hayes at (408) 720-8300.

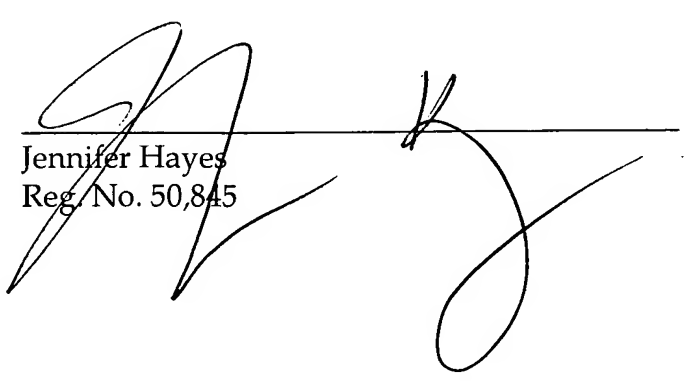
Please charge any shortages and credit any overages to Deposit Account No. 02-2666. Any necessary extension of time for response not already requested is hereby requested. Please charge any corresponding fee to Deposit Account No. 02-2666.

Respectfully submitted,

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